Managing Stress on Turfgrass

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Personal Background

- 25 years experience in golf.
- 20 years experience in golf course management.
- Certified Golf Course Superintendent (CGCS) Class A member with the GCSAA.
- Graduate from University of Hawaii; WCC campus Turf, Agricultural, and Plant Landscaping programs.
- Graduate Ohio State University Golf Course Management on-line Program.
- Extensive experience with various turf types and various golf courses around Hawaii and Asia.
What Causes Turfgrass Stress?
Factors:

- Weather.
- Traffic & Compaction. Ex. Players, golf and maintenance equipment and staff, wildlife, etc.
- Mowing heights & mower blade sharpness.
- Poor nutrition.
- Poor soils. Ex. Drainage, topdressing materials.
- Shade.
- Various pests. Fungi, Insects, Nematodes, etc.
- Improper irrigation scheduling.
- The wrong grass selection.
Remedies for Weather

- We cannot control weather, but can try to forecast out and make predictions beforehand.
- Raise heights.
- Reduce or increase mowing frequency.
- Improve drainage where possible.
- Remove weak trees or landscapes.
- Lower ponds if possible that store runoff.
- Dry out the golf course beforehand if possible.
Remedies to assist with Traffic & Compaction

Golfers

• Signage.
• Etiquette enforcement.
• Sectioning off areas with rope, stakes, etc.
• Cart path only enforcement.
• Boundaries set by GPS control.

Maintenance

• Rotate your mowing patterns.
• Rest worn areas whenever possible.
• Rotate maintenance pathways and access ways.
• Resting between mowing schedules.
• Try to mow when conditions are drier.
• Incorporate good cultivation practices. Ex. Aeration, verti-cutting, etc.
• Utilize amendments.
Remedies for Mowing Heights & Mower Sharpness

Mowing Heights

• When the weather is poor, don’t hesitate to raise your mowing heights.
• The biggest problem with raising mowing heights is not acting quickly enough.
• More leaf tissue helps with plant photosynthesis and stronger root systems.

Mower Blade Sharpness

• Inspect mower blade sharpness daily.
• Dull blades cause tearing and many unwanted problems such as increased pest potential, wilting, etc.
• Also poor playing conditions can result from dull mower blades.
Remedies for Poor Nutrition

- Always get the appropriate testing done by an accredited laboratory to see how you are doing with soil nutrition.
- Water testing.
- Tissue testing.
- Always be sure to physically examine the progress of your turf, and not to only judge by color.
- Don’t be afraid to give supplemental fertility when needed for that extra boost.
Macro and Micro Nutrients

**Macro Nutrients**

Carbon (C) Hydrogen (H) Oxygen (*Used in exceptionally large quantities*)

Carbon, Hydrogen and Oxygen represent 90-96% of the dry matter of all plants.

(O) Nitrogen (N) Phosphorus (P) Potassium (K) (*Used in large quantities*)

**Secondary Nutrients** (*Used in moderate quantities*)

Calcium (Ca) Magnesium (Mg) Sulfur (S)

**Micronutrients** (*Used in small quantities*)

Boron (B) Chlorine (Cl) Cobalt (Co) Copper (Cu)
Iron (Fe) Manganese (Mn) Molybdenum (Mo) Nickel (Ni)
Silicon (Si) Sodium (Na) Zinc (Zn) Vanadium (Va)
Ph Nutrient Availability Scale
Remedies for Poor Soils

- Good cultivation practices: Ex. Aeration, slicing, verti-cutting, etc.

- Topdressing/incorporating *the appropriate* material into or over existing soils. Have the material tested if you are unsure of its physical properties and get the *appropriate recommendations through an accredited laboratory*.

- Install drainage where necessary. Surface drainage, swells, piped drainage, gravel drainage, more drainage basins, etc.

- Flush soils when there are issues with excessive salts. Add Gypsum to help.
Drainage

Pre-Installed Drainage

Post-Drainage Installation
Shade
Shade Remedies

- Turfgrass Selection.
- Tree thinning or removal.
- Raise heights.
- Reduce mowing frequency.
- Reduce watering.
- Monitor for pest. Ex. Disease, insects, etc.
- Reduce traffic into these areas if possible.
Pest Problem Remedies

- Properly identify the problem.
- If disease issues are evident and cannot be properly identified, send it out to an accredited laboratory.
- Be consistent with your programs and be persistent with applications until the pressure has subsided.
- Preventive measures are always better and have less risk.
- Be sure of your calibration rates, nozzle types, rates, etc.
- Supplemental fertility can sometimes assist with turf regeneration.
- Traps, deterrents, and scarecrows can help with wildlife issues.
Remedies for Improper Irrigation Scheduling

- Monitor weather daily. Record rainfall and weather daily. Utilize special instruments such as Weather stations, rain gauges, weather forecasts, soil moisture sensors, etc.

- Deep and infrequent should be your goal. This promotes deeper root growth.

- Understand that different soils have different infiltration rates.

- Do physical tests in the field to achieve your desired depth of watering.

- Identify all microclimates of the golf facility and adjust accordingly.
The Wrong Grass Selection

- Sometimes you have the wrong grass for the wrong environment. It happens.
- Consider different types of grasses that can adapt and be less of a maintenance problem for you.
- Address increased traffic areas first, then expand from those areas.
Tifton 328
Common Bermudagrass
TifEagle
Tifdwarf
Tifway 419
Celebration
Seashore Paspalum Types
Salam
Seaspray
Sea Isle 2000
SeaDwarf
Platinum
Zoysia Grass Types
Emerald Zoysia
Japonica Zoysia
El Toro Zoysia
Questions?
Maraming Salamat sa inyo ang lahat!!